

WHAT IS CLAIMED IS:

1. An adhesive composition, comprising:
an atactic polymer having a degree of crystallinity of about 20% or less and a number-average molecular weight between about 1,000 and about 300,000;
an isotactic polymer having a degree of crystallinity of about 40% or greater and a number-average molecular weight between about 3,000 and about 200,000; and
an elastomeric base polymer.
2. The adhesive composition of Claim 1, wherein the atactic polymer comprises atactic polypropylene.
3. The adhesive composition of Claim 1, wherein the atactic polymer is selected from the group consisting of: low density polyethylene, atactic polystyrene, atactic polybutene, amorphous polyolefin copolymer, and combinations thereof.
4. The adhesive composition of Claim 3, wherein the low density polyethylene has a density in a range of about 0.910 to about 0.935 grams per cubic centimeter.
5. The adhesive composition of Claim 1, wherein the isotactic polymer comprises isotactic polypropylene.
6. The adhesive composition of Claim 1, wherein the isotactic polymer is selected from the group consisting of: high density polyethylene, isotactic polystyrene, isotactic polybutene, and combinations thereof.
7. The adhesive composition of Claim 6, wherein the high density polyethylene has a density in a range of about 0.935 to about 0.980 grams per cubic centimeter.

8. The adhesive composition of Claim 1, wherein the elastomeric base polymer comprises a styrene content of between about 0% and about 45% by weight.

9. The adhesive composition of Claim 1, wherein the elastomeric base polymer comprises at least one of the group consisting of: styrene-isoprene-styrene (SIS) multi-block copolymer, styrene-butadiene-styrene (SBS) multi-block copolymer, styrene-ethylene-butene-styrene (SEBS) multi-block copolymer, styrene-ethylene-propylene-styrene (SEPS) multi-block copolymer, metallocene polyethylene/octane/polypropylene and/or butane, hexane, polyisoprene, polybutadiene, or ethylene vinyl acetate copolymers, and combinations thereof.

10. The adhesive composition of Claim 1, wherein the elastomeric base polymer has a melt flow rate between about 10 and about 2000 grams per minute, a Shore A hardness between about 20 and about 70, and may be stretched to about 1300% or less.

11. The adhesive composition of Claim 1, comprising between about 30% and about 90% by weight atactic polymer.

12. The adhesive composition of Claim 1, comprising between about 5% and about 30% by weight isotactic polymer.

13. The adhesive composition of Claim 1, comprising between about 2% and about 20% by weight elastomeric base polymer.

14. The adhesive composition of Claim 1, further comprising a low softening point additive having a softening point of about 80 degrees Celsius or less and a viscosity of about 1000 cps or less at 182 degrees Celsius, present in an amount between about 0% and about 40% by weight of the adhesive composition.

15. The adhesive composition of Claim 1, further comprising about 50% or less by weight of any additive selected from the group consisting of: a tackifier, an antioxidizing agent, a plasticizer, mineral oil, color pigment, filler, high softening point tackifier, a polymer compatibilizer, and combinations thereof.

16. The adhesive composition of Claim 1, wherein the composition can be processed by conventional hot melt equipment.

17. The adhesive composition of Claim 1, wherein the adhesive composition is hot-melt processable at about 450 degrees Fahrenheit or less.

18. A laminated structure, comprising:
first and second facing layers; and
a stretchable adhesive composition between at least a portion of each of the first and second facing layers, the stretchable adhesive composition including an atactic polymer having a degree of crystallinity of about 20% or less, an isotactic polymer having a degree of crystallinity of about 40% or greater, and an elastomeric base polymer.

19. The laminated structure of Claim 18, wherein at least one of the first and second facing layers comprises at least one of the group consisting of: nonwoven material, woven material, hook material, laminate, film, an elasticized component, and combinations thereof.

20. The laminated structure of Claim 18, wherein at least one of the first and second facing layers comprises at least one of the group consisting of: a spunbond web, a meltblown web, a necked-bonded laminate, hook material, and combinations thereof.

21. The laminated structure of Claim 18, wherein the first and second facing layers are each part of a single substrate.

22. The laminated structure of Claim 18, wherein the laminated structure has a static-peel-failure time of about 2 hours or greater at 100 degrees Fahrenheit.

23. The laminated structure of Claim 18, wherein the laminated structure has a static-peel-failure time of about 4 hours or greater at 100 degrees Fahrenheit.

24. The laminated structure of Claim 18, wherein the laminated structure has a static-peel-failure time of about 8 hours or greater at 100 degrees Fahrenheit.

25. The laminated structure of Claim 18, wherein the laminated structure has a relative accretion value of about 1 or less.

26. The laminated structure of Claim 18, wherein the laminated structure has a relative accretion value of about 0.5 or less.

27. The laminated structure of Claim 18, wherein the laminated structure has a relative accretion value of about 0.2 or less.

28. The laminated structure of Claim 18, wherein the atactic polymer is selected from the group consisting of: atactic polypropylene, low density polyethylene, atactic polystyrene, atactic polybutene, amorphous polyolefin copolymer, and combinations thereof.

29. The laminated structure of Claim 18, wherein the isotactic polymer is selected from the group consisting of: isotactic polypropylene, high density polyethylene, isotactic polystyrene, isotactic polybutene, and combinations thereof.

30. The laminated structure of Claim 18, wherein the elastomeric base polymer comprises at least one of the group consisting of: styrene-isoprene-styrene (SIS) multi-block copolymer, styrene-butadiene-styrene (SBS) multi-block copolymer, styrene-ethylene-butene-styrene (SEBS) multi-block copolymer, styrene-ethylene-propylene-styrene (SEPS) multi-block copolymer, metallocene polyethylene/octane/polypropylene and/or butane, hexane, polyisoprene, polybutadiene, or ethylene vinyl acetate copolymers, and combinations thereof.

31. The laminated structure of Claim 18, wherein the stretchable adhesive composition further comprises a low softening point additive having a softening point of about 80 degrees Celsius or less and a viscosity of about 1000 cps or less at 182 degrees Celsius, present in an amount between about 0% and about 40% by weight of the stretchable adhesive composition.

32. The laminated structure of Claim 18, wherein the stretchable adhesive composition further comprises about 50% or less by weight of any additive selected from the group consisting of: a tackifier, a high softening point tackifier, an antioxidizing agent, a plasticizer, mineral oil, color pigment, filler, a polymer compatibilizer, and combinations thereof.

33. A garment comprising the laminated structure of Claim 18.

34. The laminated structure of Claim 33, wherein the garment is selected from the group consisting of: personal care garments, medical garments, and industrial workwear garments.

35. The laminated structure of Claim 33, wherein the garment is selected from the group consisting of: diapers, training pants, swim wear, absorbent underpants, adult incontinence products, feminine hygiene products, protective medical gowns, surgical medical gowns, caps, gloves, drapes, face masks, laboratory coats, and coveralls.

36. A method of making a stretchable laminate, comprising the steps of:
forming a stretchable adhesive composition by combining between about 30 and about 90 wt% atactic polymer having a degree of crystallinity of about 20% or less and a number-average molecular weight between about 1,000 and about 300,000, between about 5 and about 30 wt% isotactic polymer having a degree of crystallinity of about 40% or greater and a number-average molecular weight between about 3,000 and about 200,000, and between about 2 and about 20 wt% elastomeric base polymer;
providing a first substrate;
providing a second substrate;
applying the stretchable adhesive composition to at least one of the first substrate and the second substrate; and
joining at least a portion of the first substrate to at least a portion of the second substrate with at least a portion of the applied adhesive composition positioned between the first substrate and second substrate.

37. The method of Claim 36, wherein the atactic polymer is selected from the group consisting of: atactic polypropylene, low density polyethylene, atactic polystyrene, atactic polybutene, amorphous polyolefin copolymer, and combinations thereof.

38. The method of Claim 36, wherein the isotactic polymer is selected from the group consisting of: isotactic polypropylene, high density polyethylene, isotactic polystyrene, isotactic polybutene, and combinations thereof.

39. The method of Claim 36, wherein the elastomeric base polymer comprises at least one of the group consisting of: styrene-isoprene-styrene (SIS) multi-block copolymer, styrene-butadiene-styrene (SBS) multi-block copolymer, styrene-ethylene-butene-styrene (SEBS) multi-block copolymer, styrene-ethylene-propylene-styrene (SEPS) multi-block copolymer, metallocene polyethylene/octane/polypropylene and/or butane, hexane, polyisoprene, polybutadiene, or ethylene vinyl acetate copolymers, and combinations thereof.

40. The method of Claim 36, further comprising combining in the stretchable adhesive composition about 50% or less by weight of any additive selected from the group consisting of: a low softening point additive, a tackifier, an antioxidizing agent, a plasticizer, mineral oil, color pigment, filler, high softening point tackifier, a polymer compatibilizer, and combinations thereof.

41. The method of Claim 36, comprising processing the stretchable adhesive composition with conventional hot melt equipment.

42. The method of Claim 36, wherein at least one of the first and second facing layers comprises at least one of the group consisting of: nonwoven material, woven material, hook material, laminate, film, and an elasticized component.

43. The method of Claim 36, wherein at least one of the first and second facing layers comprises at least one of the group consisting of a spunbond web, a meltblown web, a necked-bonded laminate, hook material, and combinations thereof.